

Amendment to the Specification

Please replace paragraph [0013] with the following:

[0013] Numerous embodiments of a method for direct chemical analysis of sacrificial or dyed coating material are described. In one embodiment of the present invention, a sacrificial light absorbing material (SLAM) may be analyzed by high performance liquid chromatography (HPLC) prior to the SLAM being deposited on a substrate (e.g., active and passive devices that are formed on a silicon wafer). In another embodiment of the present invention, a spin-on-glass (SOG) material or a combination of SLAM and SOG may be analyzed by HPLC prior to or during a process to form a semiconductor device. An in-process analysis of SLAM and SOG allows for the detection of integrated performance deficiencies (i.e., defects) by identifying chemical markers strongly correlating with SLAM or SOG defects. In one embodiment, the HPLC analysis of SLAM and SOG materials may be done in conjunction with a dual damascene process.

Please replace paragraph [0019] with the following:

[0019] Another advantage of HPLC assay for dye coating materials, such as SLAM and SOG, is the detection of material defects in process (i.e., during semiconductor fabrication). As such, prolonged test periods or delays caused by waiting for results of tests performed outside of a fabrication setting are avoided. In a method of the present invention, first conductive layer 101 is formed on substrate 100. Substrate 100 may be any surface, generated when making an integrated circuit, upon which a conductive layer may be formed. Substrate 100 thus may include, for example, active and passive devices that are formed on a silicon wafer, such as transistors, capacitors, resistors, diffused junctions, gate electrodes,

local interconnects, etc. Substrate 100 also may include insulating materials (e.g., silicon dioxide, either undoped or doped with phosphorus (PSG) or boron and phosphorus (BPSG); silicon nitride; silicon oxynitride; or a polymer) that separate such active and passive devices from the conductive layer or layers that are formed on top of them, and may include previously formed conductive layers.

Please replace paragraph [0053] with the following:

[0053] FIGS. 3A – 3C illustrate alternative methods for the assay of sacrificial or dyed coating material to detect material defects. In one method, a sacrificial material may be analyzed by HPLC to identify material defects, block 302. The sacrificial material may be a sacrificial light absorbing material or other types of dyed coating materials, such as SOG, that may be used in semiconductor fabrication. Analysis by HPLC allows for the identification of chemical markers correlating with material contaminants (e.g., FIG. 1B), block 304.

Contaminants may adversely affect sacrificial material performance during a semiconductor fabrication process (e.g., dual damascene). Analysis by HPLC also allows for identifying chemical markers correlating with material degradation (e.g., FIG. 1C), block 306. In one embodiment, an ultraviolet/visual and mass spectroscopy system may be used following the HPLC assay to identify the chemical markers correlating with SLAM and contaminant material. The monitoring wavelength of the UV/VIS detector for SLAM may be between about 240 nanometers to about 260 nanometers.

Please replace paragraph [0055] with the following:

[0055] FIG. 3C illustrates an alternative method for the assay of sacrificial or dyed coating material to detect material defects during in process (i.e., during semiconductor fabrication

process or dual damascene). A SLAM sample is analyzed/assayed by HPLC, block 320. An ultraviolet/visual and mass spectroscopy system may be used following the HPLC assay to identify the chemical markers. For example, the HPLC assay may indicate a clean uncontaminated SLAM sample, identification material defects, or SLAM degradation over time. A conductive layer is formed on a substrate, block 322, then a dielectric layer on the conductive layer, block 324. After forming the dielectric layer, a layer of photoresist is patterned to define a region to be etched, block 326. A first etched region is then formed by removing a first portion of the dielectric layer, block 328. That first etched region is filled with a SLAM, block 330. In one embodiment, the SLAM has dry etch properties similar to those of the dielectric layer. A second etched region is then formed by removing the sacrificial material and a second portion of the dielectric layer, block 332.

Amendment to the Drawings

The Examiner has objected to the drawings. Applicant has amended the drawings to include the Legend that reads "Prior Art" in Figures 2A-2H.